Draft for Review

November 24, 2015 Reference No. 038443-62

Mr. Timothy D. Hoffman
Dinsmore & Shohl
Fifth Third Center
1 S. Main St. Suite 1300
Dayton, Ohio
45402

Mr. Howard Updyke – Occupant
Megacity of Cincinnati, LLC.
2075 Dryden Road
Moraine, Ohio
45439

Dear Messrs. Hoffman and Updyke:

Re: Summary of Vapor Intrusion Sampling Results
Megacity of Cincinnati - Building 17
South Dayton Dump and Landfill Site, Moraine, Ohio

GHD (formerly Conestoga-Rovers & Associates [CRA]) prepared this letter to inform you of the results of the vapor intrusion (VI) sampling completed at your property from 2012 to 2015. Sub-slab (SS, space under your building floor) and indoor air (IA) samples were collected in 2012 as part of the VI investigation at the South Dayton Dump and Landfill (SDDL) Site, and from 2013 to 2015 to evaluate the performance of the installed sub-slab depressurization system (SSDS).The sample locations within Megacity of Cincinnati, LLC. (Megacity, designated as Building 17) are presented on Figure 1. GHD is conducting this work on behalf of the companies that have responded to United States Environmental Protection Agency (USEPA) requests for Site investigation and VI studies (Respondents). Oversight is being performed by USEPA.

VI is the migration of volatile chemicals from the subsurface into overlying buildings. VI is a potential concern at any building, existing or planned, located near soil, groundwater, or soil vapor containing solvent- or petroleum-related compounds that may volatilize or chemicals that are combustible.

GHD collected SS and IA samples to determine if solvent- or petroleum-based compounds are present in soil vapor beneath the foundation and in IA within the buildings at levels which exceed SS and/or IA screening levels, as established by the Ohio Department of Health (ODH) in 2012.

The ODH has recommended the screening levels for SS and IA samples. The 2012 screening levels represent concentrations of substances that are unlikely to cause harmful (adverse) health effects in exposed people, based on residential exposure. Detections in IA below these levels are not a health concern. The SS screening levels are calculated based on an attenuation factor (AF) to account for the mixing and ventilation that occurs when vapors enter the indoor air space[1]. In November 2015,

[1] The 2012 ODH Screening levels were calculated based on an AF of 10, reflective of 2002 USEPA guidance. USEPA revised and issued final VI guidance in 2015 which utilizes an AF of 33 for residential buildings; see

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USEPA proposed to supplement the ODH screening levels for the industrial buildings with SSDSs at the Site with SS values based on an AF of 33, to reflect current VI guidance for residential buildings (screening levels calculated based on an AF of 33 are referred to as ODH SS screening levels (AF=33)). GHD collected and submitted samples to TestAmerica Inc. GHD received and validated the results of the laboratory analysis. A copy of the validated analytical results compared to the ODH screening levels (AF=10) can be found in Table 1.

From 2013 to present, GHD completed IA proficiency sampling at Megacity Building 17 in accordance with the USEPA-approved VI Mitigation Work Plan because the vacuum readings throughout the building were at -0.004 inches of water column (" w.c.) or better.

Compounds detected at concentrations greater than the ODH SS screening levels (AF=10; AF=33) and ODH IA screening levels from SS and IA samples are presented below. All of the samples are reported in units of parts per billion by volume (ppbv).

Table A Summary of Building 17 Sampling Results for Megacity

Location	Sample Type	Sampling Date	Parameter	Detected Concentration (ppbv)	ODH IA Screening Level (AF=10) (ppbv)	ODH SS Screening Levels (AF = 10; AF=33) (ppbv)
SS-17-A	Sub-slab	01/09/2012	Trichloroethene (TCE)	26	Not Applicable	20; 66
		03/07/2012		24		
		08/01/2012		120		
SS-17-B	Sub-slab	01/09/2012	TCE	21	Not Applicable	20; 66
		03/07/2012		24		
		08/01/2012		120		
IA-17-B	Indoor Air	06/03/2014	Benzene[A]	3.1	2	Not Applicable
IA-17-Office	Indoor Air	06/03/2014	Benzene[A]	1.9 / 2.3	2	Not Applicable

Notes:

Value / Value – Result / Duplicate Result
[A] – This compound was either not detected or detected at concentrations less than the ODH screening level in the adjacent sub-slab soil vapor sample, indicating that the indoor air concentration is not due to vapor intrusion

"OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Source to Indoor Air (USEPA, June 2015) (Final Vapor Intrusion Guidance)".

What do these results mean?

Benzene was detected in June 2014 IA samples at concentrations greater than its ODH IA screening level. Benzene was detected in 2012 samples at concentrations less than the ODH IA screening level and was either not detected or detected at concentrations less than its ODH SS screening level in the SS soil vapor samples collected in 2012, indicating that the 2014 IA benzene concentration was not due to VI, but instead was due to presence in ambient air. VI-related concentrations in IA samples do not exceed screening levels.

The 2012 TCE SS sample results were greater than the ODH SS screening level. TCE was either not detected or detected at concentrations less than the ODH IA screening level in IA samples. These results showed that at the time of each sampling event in 2012, VI was not documented in Building 17, but there was potential for VI to occur.

The installation of the SSDS in Building 17 was completed on December 18, 2013. In accordance with the USEPA-approved VI Mitigation Work Plan, proficiency sampling completed following the installation of the SSDS consisted only of indoor air samples because the vacuum at all compliance points throughout the building demonstrated acceptable sub-slab depressurization. There have been no exceedances of indoor air ODH screening levels, with the exception of June 2014 benzene concentrations, which indicates that the SSDS is mitigating VI from SS soil vapor into IA.

Conclusion

The sampling results show that SSDS is successfully mitigating VI in Building 17.

Recommendation

GHD will complete quarterly checks of the SSDS and collect SS and IA samples annually every February to ensure acceptable system operation conditions.

If you have questions related to the sampling or on-going site investigation, please do not hesitate to contact the undersigned.

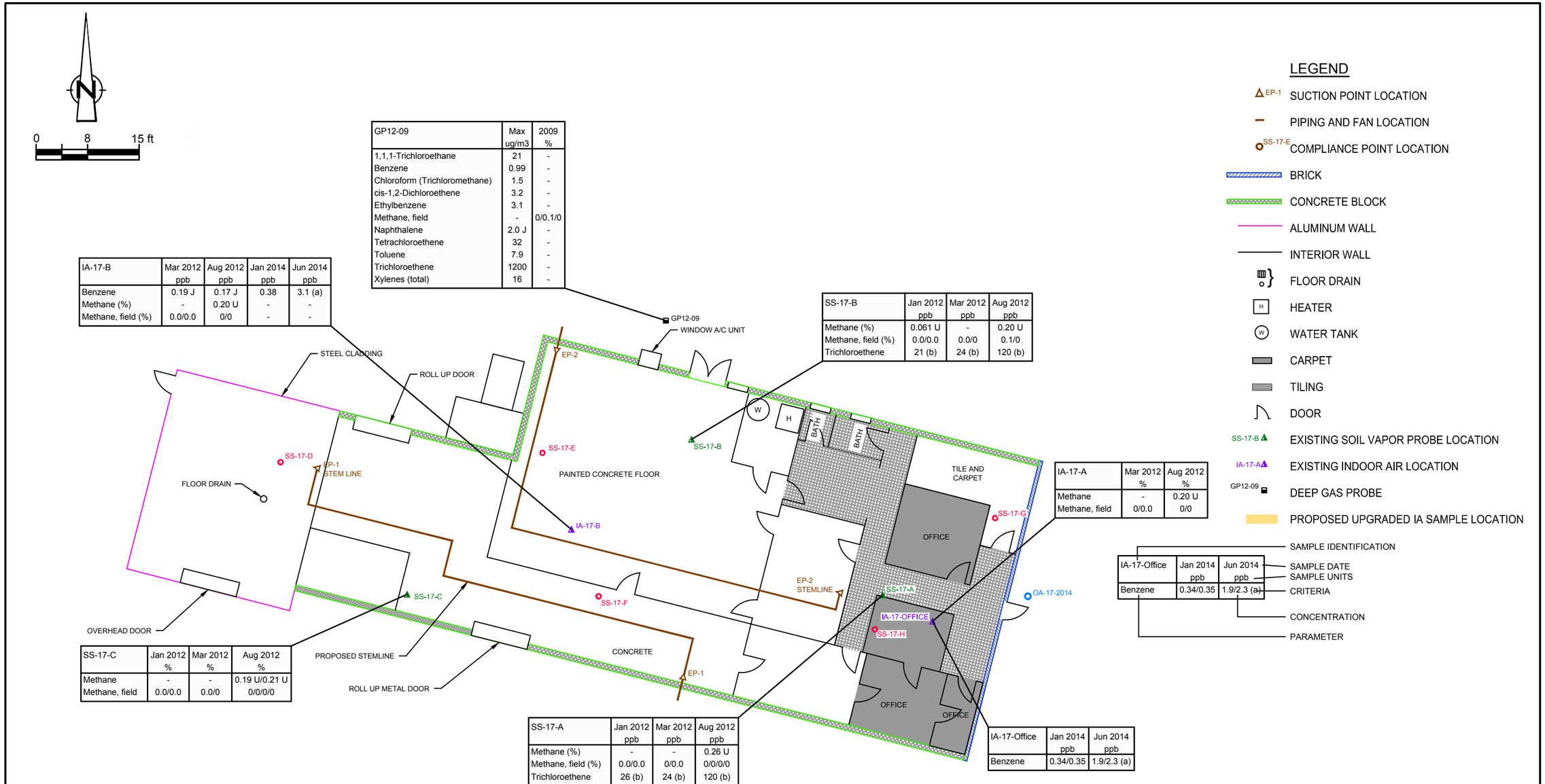
GHD Services Inc.

Julian Hayward, P. Eng.

VC/cb/1

Encl.

cc: Steve Renninger - U.S. EPA Removal Program Manager
Leslie Patterson – U.S. EPA Remedial Program Manager
Jenny Davison – U.S. EPA Remedial Program Manager
Maddie Adams – Ohio EPA, Site Coordinator
Julian Hayward - GHD



GP12-09	Max ug/m3	2009 %
1,1,1-Trichloroethane	21	-
Benzene	0.99	-
Chloroform (Trichloromethane)	1.5	-
cis-1,2-Dichloroethene	3.2	-
Ethylbenzene	3.1	-
Methane, field	-	0/0.1/0
Naphthalene	2.0 J	-
Tetrachloroethene	32	-
Toluene	7.9	-
Trichloroethene	1200	-
Xylenes (total)	16	-

IA-17-B	Mar 2012 ppb	Aug 2012 ppb	Jan 2014 ppb	Jun 2014 ppb
Benzene	0.19 J	0.17 J	0.38	3.1 (a)
Methane (%)	-	0.20 U	-	-
Methane, field (%)	0.0/0.0	0/0	-	-

SS-17-B	Jan 2012 ppb	Mar 2012 ppb	Aug 2012 ppb
Methane (%)	0.061 U	-	0.20 U
Methane, field (%)	0.0/0.0	0.0/0	0.1/0
Trichloroethene	21 (b)	24 (b)	120 (b)

IA-17-A	Mar 2012 %	Aug 2012 %
Methane	-	0.20 U
Methane, field	0/0.0	0/0

SS-17-C	Jan 2012 %	Mar 2012 %	Aug 2012 %
Methane	-	-	0.19 U/0.21 U
Methane, field	0.0/0.0	0.0/0	0/0/0/0

SS-17-A	Jan 2012 ppb	Mar 2012 ppb	Aug 2012 ppb
Methane (%)	-	-	0.26 U
Methane, field (%)	0.0/0.0	0/0.0	0/0/0/0
Trichloroethene	26 (b)	24 (b)	120 (b)

IA-17-Office	Jan 2014 ppb	Jun 2014 ppb
Benzene	0.34/0.35	1.9/2.3 (a)

LEGEND

- EP-1 SUCTION POINT LOCATION
- PIPING AND FAN LOCATION
- SS-17-E COMPLIANCE POINT LOCATION
- BRICK
- CONCRETE BLOCK
- ALUMINUM WALL
- INTERIOR WALL
- FLOOR DRAIN
- H HEATER
- W WATER TANK
- CARPET
- TILING
- DOOR
- SS-17-B EXISTING SOIL VAPOR PROBE LOCATION
- IA-17-A EXISTING INDOOR AIR LOCATION
- GP12-09 DEEP GAS PROBE
- PROPOSED UPGRADED IA SAMPLE LOCATION

IA-17-Office | Jan 2014 ppb | Jun 2014 ppb
Benzene | 0.34/0.35 | 1.9/2.3 (a)

- SAMPLE IDENTIFICATION
- SAMPLE DATE
- SAMPLE UNITS
- CRITERIA
- CONCENTRATION
- PARAMETER

Chemical	ODH Non-Residential Screening Levels	
	Indoor Air (a) (ppb)	Sub-Slab (b) (ppb)
Benzene	2	20
Methane	0.05	0.5
Methane, field	0.05	0.5
Trichloroethene	2	20

figure 1

2075 DRYDEN ROAD
PARCEL NUMBER 5175, BUILDING 17
SOUTH DAYTON DUMP AND LANDFILL SITE
Moraine, Ohio

Table 1

Summary Of Building 17 - Megacity Construction Vi Analytical Results
South Dayton Dump And Landfill Site
Moraine, Ohio
2012-2015

Sample Location:					IA-17-A	IA-17-A	IA-17-B	IA-17-B	IA-17-B	IA-17-B	IA-17-B	IA-17-Office
Sample Date:					3/7/2012	8/1/2012	3/7/2012	8/1/2012	1/16/2014	6/3/2014	2/19/2015	1/16/2014
	ODH Non-Residential Screening Levels		ODH Non-Residential Action Levels									
Parameters	Sub-Slab Soil Gas	Indoor Air	Sub-Slab Soil Gas	Indoor Air								
	a	c	b	d								
Volatile Organic Compounds												
1,1-Dichloroethane	160	16	1600	160	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U
Benzene	20	2	200	20	0.16 J	0.092 J	0.19 J	0.17 J	0.38	3.1[c]	0.50	0.34
Chloroform (Trichloromethane)	800	80	8000	800	0.038 U	0.038 U	0.038 U	0.043 J	0.050 J	0.038 U	0.038 U	0.038 U
cis-1,2-Dichloroethene	370	37	3700	370	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U
Ethylbenzene	2500	250	25000	2500	0.068 U	0.068 U	0.11 J	0.13 J	0.93	3.3	0.54	0.87
m&p-Xylenes	2000	200	20000	2000	0.13 J	0.12 U	0.39	0.53	2.9	13	1.9	2.7
Naphthalene	29	2.9	-	-	0.090 UJ	0.090 U	0.090 UJ	0.19 J	0.090 UJ	0.36 J	0.090 U	0.090 UJ
o-Xylene	2000	200	20000	2000	0.061 U	0.061 U	0.14 J	0.22	0.80	4.4	0.57	0.75
Tetrachloroethene	250	25	2500	250	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U
Trichloroethene	20	2	200	20	0.036 U	0.062 J	0.036 U	0.18 J	0.036 U	0.12 U	0.057 J	0.036 U
Vinyl chloride	20	2	200	20	0.071 U	0.071 U	0.071 U	0.071 U	0.071 U	0.071 U	0.071 U	0.071 U

Notes:

All units are in parts per billion by volume (ppbv)
J - Estimated concentration.
U - Not detected at the associated reporting limit.
UJ - Not detected; associated reporting limit is estimated.
- - Not applicable.
[ ] - Concentration was greater than applicable criteria.

Table 1

Summary Of Building 17 - Megacity Construction Vi Analytical Results
South Dayton Dump And Landfill Site
Moraine, Ohio
2012-2015

Sample Location:			IA-17-Office	IA-17-Office	IA-17-Office	IA-17-Office	OA-17	OA-17	OA-17	OA-17-2014	OA-17-2015	SS-17-A	SS-17-A
Sample Date:			1/16/2014	6/3/2014	6/3/2014	2/19/2015	3/7/2012	8/1/2012	1/16/2014	6/3/2014	2/19/2015	1/9/2012	3/7/2012
	ODH Non-Residential Screening Levels		Duplicate		Duplicate								
Parameters	Sub-Slab Soil Gas	Indoor Air											
	a	c											
Volatile Organic Compounds													
1,1-Dichloroethane	160	16	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 U	0.026 UJ	0.035 U	0.026 U
Benzene	20	2	0.35	1.9	**2.3[c]**	0.48	0.14 J	0.22	0.15 J	0.071 J	0.23 J	0.20	0.12 J
Chloroform (Trichloromethane)	800	80	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.042 J	0.038 U	0.038 U	0.038 UJ	0.031 U	0.038 U
cis-1,2-Dichloroethene	370	37	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U	0.060 U	0.060 UJ	0.014 U	0.060 U
Ethylbenzene	2500	250	0.63	1.7	2.2	0.46	0.068 U	0.16 J	0.068 U	0.068 U	0.068 UJ	0.40	0.18 J
m&p-Xylenes	2000	200	1.9	6.9	8.6	1.6	0.12 U	0.58	0.13 J	0.13 J	0.12 UJ	1.0	0.47
Naphthalene	29	2.9	0.090 UJ	0.22 J	0.18 J	0.090 U	0.090 UJ	0.090 U	0.090 U	0.090 U	0.090 UJ	0.21 J	0.12 J
o-Xylene	2000	200	0.55	2.2	2.7	0.47	0.061 U	0.24	0.061 U	0.061 U	0.061 UJ	0.57	0.24
Tetrachloroethene	250	25	0.040 U	0.040 U	0.040 U	0.050 J	0.040 U	0.040 U	0.040 U	0.040 U	0.040 UJ	1.3	1.0
Trichloroethene	20	2	0.058 U	0.049 U	0.063 U	0.039 J	0.036 U	0.16 J	0.036 U	0.036 U	0.041 J	**26[a]**	**24[a]**
Vinyl chloride	20	2	0.071 U	0.071 U	0.071 U	0.071 U	0.071 U	0.071 U	0.071 U	0.071 U	0.071 UJ	0.029 U	0.071 U

Notes:

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J - Estimated concentration.
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- - Not applicable.
[ ] - Concentration was greater than applicable criteria.

Table 1

Summary Of Building 17 - Megacity Construction Vi Analytical Results
South Dayton Dump And Landfill Site
Moraine, Ohio
2012-2015

Sample Location:			SS-17-A	SS-17-B	SS-17-B	SS-17-B	SS-17-C	SS-17-C	SS-17-C	SS-17-C
Sample Date:			8/1/2012	1/9/2012	3/7/2012	8/1/2012	1/9/2012	3/7/2012	8/1/2012	8/1/2012 Duplicate
	ODH Non-Residential Screening Levels									
Parameters	Sub-Slab Soil Gas a	Indoor Air c								
Volatile Organic Compounds										
1,1-Dichloroethane	160	16	0.046 U	0.28 U	0.026 U	0.026 U	0.035 U	0.026 U	0.026 U	0.026 U
Benzene	20	2	0.29 J	0.14 U	0.056 U	0.63	0.018 U	0.056 U	0.056 U	0.41
Chloroform (Trichloromethane)	800	80	0.70	0.25 U	0.038 U	0.10 J	0.031 U	0.038 U	0.038 U	0.038 U
cis-1,2-Dichloroethene	370	37	0.11 U	0.11 U	0.060 U	0.060 U	0.14 J	0.060 U	0.060 U	0.060 U
Ethylbenzene	2500	250	0.35	0.18 U	0.068 U	0.068 U	0.022 U	0.068 U	0.068 UJ	0.42 J
m&p-Xylenes	2000	200	1.5	0.38 U	0.12 U	0.12 U	0.074 J	0.12 U	0.15 J	2.6 J
Naphthalene	29	2.9	0.25 J	0.69 U	0.090 UJ	0.090 U	0.086 U	0.090 UJ	0.090 U	0.090 U
o-Xylene	2000	200	0.90	0.18 U	0.061 U	0.061 U	0.031 J	0.061 U	0.062 J	1.2 J
Tetrachloroethene	250	25	4.9	0.44 J	0.58	3.7	0.25	0.13 J	1.2	1.4
Trichloroethene	20	2	**120[a]**	**21[a]**	**24[a]**	**120[a]**	0.26	0.074 J	1.1	1.1
Vinyl chloride	20	2	0.12 U	0.23 U	0.071 U	0.071 U	0.029 U	0.071 U	0.071 U	0.071 U

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